Claims

1. A continuous vapor-phase fluidized-bed process for the preparation of ethylene homopolymers and copolymers having a density of from 0.87 to 0.97 g/cm^3 in which ethylene or mixtures of ethylene and C_3-C_8 a-monoolefins are (co)polymerized in the presence of a supported chromium catalyst in the polymerization zone of a vapor-phase fluidized-bed reactor under pressures ranging from 1 to 100 bar and at temperatures ranging from 30° to 125°C in the vapor phase in an agitated bed of bulk material comprising particulate polymer, the resultant heat of polymerization is removed by cooling the recirculated reactor gas and the resulting (co)polymer is removed from the vapor-phase fluidized-bed reactor, wherein, for the preparation of a (co)polymer of a specified density d, (co)polymerization is carried out at a temperature which is in a range restricted by an upper envelope defined by equation I

$$T_H = 171 + \frac{6d'}{0.84 - d'} \qquad (I)$$

and a lower envelope defined by equation II

$$T_L = 173 + \frac{7.3d'}{0.837 - d'} \qquad (II),$$

in which the variables have the following meanings:

T_H is the highest reaction temperature in °C;
T_L is the lowest reaction temperature in °C;
d' is the numerical value of the density d of the (co)polymer to be synthesized.

2. A process as defined in claim 1, wherein the lower envelope of the temperature/density function is given by equation II'

$$T_L = 175 + \frac{7.3d'}{0.837 - d'} \qquad (II).$$

3. A process as defined in claim 1 or claim 2, wherein a supported chromium catalyst is used which has been activated at a temperature between 600° and 800°C.

4. A process as defined in any of claims 1 to 3, wherein a supported chromium catalyst is used which has an average pore volume of from 1.0 to 3.0 mL/g.

5. A process as defined in any of claims 1 to 4, wherein ethylene is copolymerized with 1-hexene.

6. An ethylene homopolymer or copolymer whenever produced by a process as defined in any of claims 1 to 5.

7. An ethylene copolymer as defined in claim 6 having a density of from 0.930 to 0.945.

8. An ethylene copolymer as defined in claim 6 or claim 7 having a melt flow rate MFR of from 8 to 16, measured as specified by ISO 1133.

9. A method of using an ethylene copolymer as defined in any of claims 6 to 8 for the manufacture of a film.

10. A film whenever produced by a method of using an ethylene copolymer as defined in claim 9.